

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

ID: A

## RESPIRATORY SYSTEM

### True/False

Indicate whether the statement is true or false.

- T   1. The efficiency of the oxygen-carbon dioxide exchange surface in any organism is directly related to its surface area.
- F   2. Earthworms can exchange oxygen and carbon dioxide efficiently while remaining stationary as they sun themselves on a rock or sidewalk.
- T   3. Only the respiratory system of males has the structure known as "Adam's apple."
- T   4. Air moves into the lungs from outside the body when air pressure within the lungs is less than the atmospheric pressure.

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- b   5. Which of the following reactions correctly describes cellular respiration?
- a. oxygen + carbon dioxide → sugar + water + energy
  - b. oxygen + sugar → carbon dioxide + water + energy
  - c. oxygen + water → sugar + carbon dioxide + energy
  - d. carbon dioxide + water + energy → sugar + oxygen
  - e. carbon dioxide + oxygen + energy → sugar + water
6. In order for the most efficient transfer of oxygen to occur in the gills of a fish
- a. blood flow and water flow must be in the same direction.
  - b. blood flow and water flow must be in the opposite direction.
  - c. the water must be warm.
  - d. the blood in the systemic and pulmonary systems must remain completely separate.
  - e. the fish must always be moving.
- b   7. All complex organisms require which of the following to accomplish successful gas exchange?
- a. gills
  - b. lungs
  - c. a moist membrane
  - d. moist skin
  - e. freely permeable cell membranes
- b   8. Which structure is used by both the digestive and respiratory systems?
- a. nasal cavity
  - b. pharynx
  - c. larynx
  - d. bronchi
  - e. alveoli
- d   9. Which of the following leads to inhalation
- a. The diaphragm moves upward and the ribs move upward.
  - b. The diaphragm moves upward and the ribs move downward.
  - c. The diaphragm moves upward and ribs remain stationary.
  - d. The diaphragm moves downward and the ribs move upward.
  - e. The diaphragm moves downward and the ribs move downward.

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  c   10. Gases diffuse

- a. from an area of low pressure to another area of low pressure.
- b. from an area of high pressure to another area of high pressure.
- c. from an area of high pressure to an area of low pressure.
- d. from an area of low pressure to an area of high pressure.
- e. from an area where they are not needed to an area where they are needed.

  b   11. Which of the following is **not** true of the nasal cavities of mammals?

- a. They are lined with tiny hairs that act as a filtering system.
- b. They have surface cells that directly absorb incoming air.
- c. They serve to moisten and warm the incoming air.
- d. They contain mucus that keeps the cells lining the cavity moist.
- e. They open into to a channel called the pharynx.

**Matching**

*Match the following structures with their correct descriptions.*

- |                    |                         |
|--------------------|-------------------------|
| a. alveoli         | e. pharynx              |
| b. bronchioles     | f. pleural membrane(ab) |
| c. turbinate bones | g. trachea(ac)          |
| d. epiglottis      | h. nasal passage(ad)    |

  h   12. moisten and warm air

  f   13. thin membrane covering the outer surface of the lung

  a   14. air sacs surrounded by capillaries

  g   15. strengthened by rings of cartilage

  c   16. cavity lined with cilia to sweep out debris

  d   17. a flaplike structure that closes when food is swallowed

  e   18. a passageway associated with both the digestive and respiratory systems

  b   19. many branches ending in clusters of alveoli

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**Test: Respiratory System**

Part A: KU /19

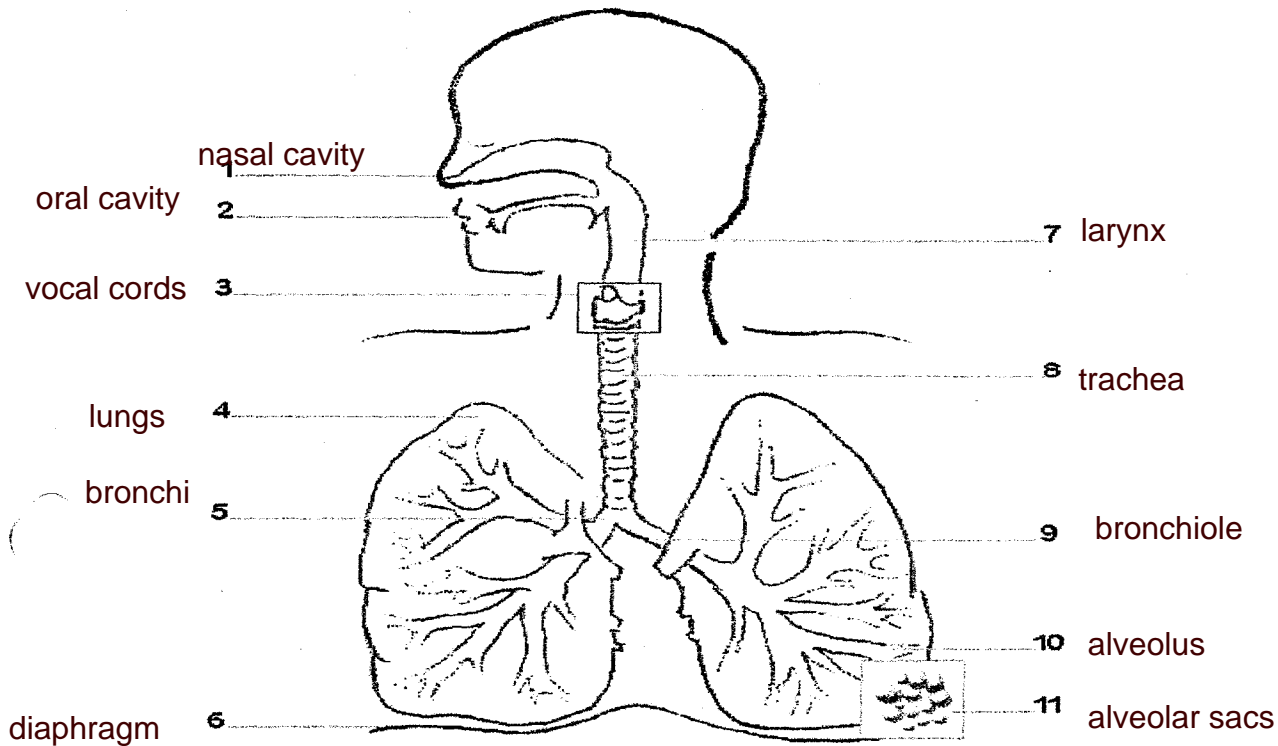
Part B: KU /11

Total KU /30

A: /6

C: 108 TI: 15

20. Label the following diagram in the spaces provided.



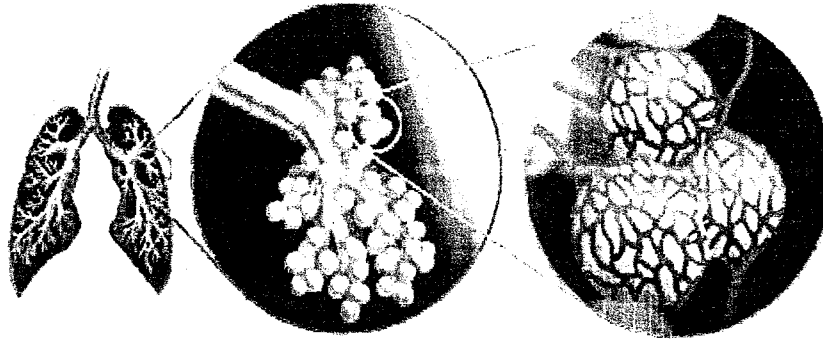
Number	Structure
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

(KU: 11 marks)

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21.



What is achieved by the arrangement of the above structures Explain.

Increase surface area

To which other body system are the above structures closely linked Explain.

circulatory system

(A: 4 marks)

22. Choose any one organism that was discussed in class and describe how it meets the requirements for successful gas exchange. Illustrations MUST be part of your answer.

Immature tadpoles: gills

Adult tadpoles: internal lungs

Frogs: do not inhale by expanding their chest cavity

force air into their lungs by a gulping and swallowing action

Immature and adult frogs: exchange gases directly through their moist outer skin

earthworms: breathe through their skin. Air dissolves on the mucus of their skin

As fresh air is taken in through the skin, oxygen is drawn into the worm's circulatory system, and the worm's hearts pump the oxygenated blood to the head area.

The movements of the worm's body make the blood flow back to the back end of the body, and the hearts pump the blood forward again.

(C: 5 marks)

Carbon dioxide dissolves out of the blood back to the skin.

23. Trace the pathway of a carbon dioxide molecule from the bloodstream until it leaves the human body. Identify all major structures and components of the respiratory and circulatory system that are involved in this process.

alveolar sac, alveoli, bronchioles, bronchi, trachea, larynx, oral cavity

(C: 3 marks)

24. A patient arrives at a hospital with constricted air passages, lungs filling with fluid, and appears to be having a severe allergic reaction. The patient's husband tells the doctors that they were in the park talking a walk, when his wife was stung by a bee.

- a) What respiratory disorder is this patient experiencing? (Please use the scientific name of the disorder, not the common name)

ANAPHYLAXIS

(T/I: /1)

- b) What medication will the doctors give this patient to reverse the effects of the allergic reaction?

epinephrine

(T/I: /1)

- c) What medical device should this patient be carrying around with them at all times now that they know they have a severe allergy to bee stings?

epipen

(T/I: /1)

- d) Briefly describe how this device should be used in the event a person is having a severe allergic reaction.

inject directly into the thigh muscle (belly)

(T/I: /2)